

§102 Rejections

Claims 1-5, 8, 11 and 12 were rejected under 35 U.S.C. §102(b) as being anticipated by Singer et al. (US 5,813,752). Applicants respectfully traverse this rejection.

With respect to pending claims 1-4, the Office Action alleges Singer teaches: an LED capable of emitting light (Fig. 3); a layer of phosphor material having a major surface positioned to receive excitation light and emitting visible light when illuminated with the excitation light (column 4, line 47 and Fig. 3); and interference reflector means positioned to reflect at least some light emitted by the LED that has not passed through the layer of phosphor material, onto the major surface layer of phosphor material and transmitting at least some visible light emitted by the phosphor (column 4, lines 51-54 and Fig. 3). Other citations to Singer are made regarding rejected claims 5, 8, 11 and 12. None of these rejections can be sustained.

With regard to pending claim 1, Applicants have previously explained that the "interference reflector means" of that claim performs two functions: (1) it reflects at least some light emitted by the LED that has not passed through the layer of phosphor material, onto the layer of phosphor material, and (2) it transmits at least some visible light emitted by the phosphor. The Examiner alleges that Singer teaches both of these functions at column 4, lines 51-54, and in FIG. 3, but that is not correct. The cited passage describes the functions of Singer's LWP filter 50, shown in Singer's Figure 3 immediately atop his phosphor layer 48. The passage states, inter alia, that the LWP filter "reflect[s] UV light which is not absorbed by the phosphor grains back to the phosphor for another opportunity to be absorbed" (emphasis added). This is consistent with Singer's Figure 3, where some UV light (indicated by the wavy arrow) generated by the LED 44 is shown passing through the phosphor layer 48 – because it has not been absorbed by the phosphor grains residing in the phosphor layer – and then being reflected by the LWP filter 50. In making the rejection, the Examiner fails to distinguish between the concepts of "not being absorbed by the phosphor grains", discussed in Singer, and "not pass[ing] through the layer of phosphor material", recited in claim 1. Singer's LWP filter 50 reflects some light emitted by his LED 44 onto his phosphor layer 48, but all of this light passes through the phosphor layer 48 as can plainly be seen in Singer's Figure 3. Indeed, it is because of this that Singer must clarify for the reader that some of the LED light entering the phosphor layer is not

absorbed by the phosphor grains - and for this reason it can pass through the phosphor layer on its way to the LWP filter. Since no portion of the UV light reflected by the LWP filter 50 onto the phosphor layer 48 "has not passed through the layer of phosphor material", the LWP filter 50 does not satisfy function (1) above and thus cannot be the "interference reflector means" set forth in claim 1. Hence, Singer fails to teach all elements of claim 1, and the rejection should be withdrawn.

Concerning pending claim 2, Singer fails to disclose every limitation of claim 2 for at least the same reason discussed above related to claim 1. Singer fails to disclose an "interference reflector" that reflects "at least some light emitted by the LED that has not passed through the layer of phosphor material, onto the layer of phosphor." Singer discloses with reference to Figure 3 passing all of the light generated by the LED 44 through the layer 46 into the phosphor layer 48. None of the light generated by the LED 44 is reflected back to the phosphor layer 48 by the LWP filter 50 without first having passed through the phosphor layer. Therefore, Singer fails to disclose every limitation of claim 2 and the claims that depend from it. The rejection of claim 2 should therefore be withdrawn.

Pending claim 3 depends from either claim 1 or claim 2, and recites that the layer of phosphor has a major surface from which light is emitted toward an output end of the light source. Claim 3 further recites that the light emitted by the LED that has not passed through the layer of phosphor material is reflected onto that major surface. The Office Action fails to address the specific structure and arrangement of features required in order to meet the limitations of claim 3. Claim 3 specifies a particular major surface of the phosphor material, namely, one from which light is emitted toward an output end of the light source. For the embodiment of Singer's Figure 3, that would be the uppermost (flat) surface of the phosphor layer 48. However, claim 3 further specifies that a particular light component is reflected onto that major surface. That light component is entirely absent from the teachings of Singer, specifically the embodiment of Figure 3 of Singer. That particular light component is the light emitted by the LED that has not passed through the layer of phosphor material and is then reflected onto the major surface of the phosphor layer by the interference reflector means (see claim 1) or the interference reflector (see claim 2). Singer fails to disclose a light component that does not first pass into or through the phosphor layer 48 before being reflected by the LWP filter

50 (see above discussion related to claims 1 and 2). Therefore, Singer fails to disclose every limitation of claim 3 for this additional reason.

The remaining claim rejections under 35 U.S.C. §102(b) cannot be sustained at least because claims 4, 5, 8, 11 and 12 each depend directly from claim 2, and the limitations of claim 2 are not disclosed by Singer as discussed above. Applicants request withdrawal of the rejection of dependent claims 4, 5, 8, 11 and 12. Applicant does not otherwise concede the correctness of these rejections as they relate to claims 4, 5, 8, 11 and 12.

§103 Rejections

The Office Action rejected dependent claims 6, 7, 9, 10, 13-19, 20 and 21 as being obvious under 35 U.S.C. §103(a) over Singer in view of a variety of secondary references including Lin (US 6,864,554), Lowery (US 5,959,316), Takahashi (US 6,717,348), and Steklenski (US 6,652,996). Applicants respectfully traverse these rejections. As discussed above, Singer fails to disclose or suggest every limitation of claim 2. None of the references Lin, Lowery, Takahashi and Steklenski remedy the deficiencies of Singer as it relates to claim 2. In particular, no combination of these cited references discloses or suggests "an interference reflector positioned to reflect at least some light emitted by the LED that *has not passed* through the layer of phosphor material, onto the layer of phosphor material," as required by claim 2. Therefore, claims 6, 7, 9, 10, 13-19, 20 and 21 are allowable and rejection of those claims should be withdrawn.

In view of the above, Applicants request reconsideration of the application in the form of a Notice of Allowance. Please continue to direct all future correspondence in this matter to Stephen C. Jensen (Reg. No. 35,207) at 3M Innovative Properties Company, P.O. Box 33427, St. Paul, Minnesota 55133-3427.

Respectfully submitted,

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